

Amendments to the Abstract (Replacement Abstract):

**METHOD AND APPARATUS FOR SEPARATING BITUMEN  
FROM PARTICULATE SUBSTRATES**

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ABSTRACT

Method and apparatus for treating an ore comprising mineral substrate particles surrounded by hydrocarbon compounds to recover a hydrocarbon and a cleaned substrate. Hydrocarbonaceous ore containing bitumen is mixed with water to form a slurry. The slurry is heated to about 80°C and is intensively sheared to condition the slurry for separation by shear-fracture of the hydrocarbon layers surrounding the particles. The conditioned slurry is blended with an aqueous hydrogen peroxide solution which enters the grains and is decomposed therein, increasing the hydrophilicity of the particle surfaces and creating bubbles of free oxygen within the grains which disrupt the hydrocarbon envelope and attach to the bitumen. Both free and bound hydrocarbons in the ore are thereby released from the substrate particles. Oxygen-buoyed hydrocarbon globules are separated from the particles by flotation. Tailings from the process are substantially free of hydrocarbon contamination and are environmentally suitable for landfill disposal.